

## ABSTRACT

A method is provided for automatically separating tooth crowns and gingival tissue in a virtual three-dimensional model of teeth and associated anatomical structures. The method orients the model with reference to a plane and automatically determines local maxima of the model and areas bounded by the local maxima. The method automatically determines saddle  
5 points between the local maxima in the model, the saddle points corresponding to boundaries between teeth. The method further positions the saddle points along a dental arch form. For each tooth, the method automatically identifies a line or path along the surface of the model linking the saddle points to each other, the path marking a transition between teeth and gingival tissue and between adjacent teeth in the model. The areas bounded by the lines  
10 correspond to the tooth crowns; the remainder of the model constitutes the gingival tissue.